REMARKS

In accordance with the foregoing, claims 1, 4, 7, 10 and 11 are amended herein. Claims 3 and 6 are cancelled, and new claim 12 has been added. Therefore, after entry of the foregoing claim amendments, claims 1, 4, 5 and 7-12 will be pending and under examination. No new matter is being presented, and approval of the amended claims is respectfully requested.

Rejections under 35 U.S.C. §103(a)

The Examiner has rejected claims 1-11 under 35 U.S.C. §103(a) as being unpatentable over Zakhor et al. (US 5699121, hereinafter referred to as "Zakhor") in view of Vleeschouwer (US 20020114393). It is noted that claims 3 and 6 are cancelled herein and, thus, the rejections thereof are considered moot. The rejections of the pending claims are respectfully traversed, and reconsideration is requested.

Claim 1 has been amended to recite: "A method for encoding a residual image using basis functions from an overcomplete library, said method comprising: obtaining the residual image, said residual image having a size and an energy; and decomposing said residual image into a list of one or more atoms, each atom representing a basis function from the overcomplete library, decomposing said residual image comprising: identifying a replacement region in the residual image for representation by an atom, the replacement region being determined by adding an adjacent block to an initial block of the residual image when an energy of the adjacent block exceeds an energy threshold; creating a subset of basis functions from the overcomplete library, each basis function in the subset matching with a shape of the replacement region within a predetermined threshold; identifying an atom within the subset of basis functions using progressive elimination, said atom for representing the replacement region and said atom having parameters; quantizing said atom and modifying the parameters of the atom into a form suited for encoding; encoding said quantized atom, subtracting said atom from the replacement region in the residual image to reduce the energy of the residual image and using a quadtree-based atom coder to reduce the size of the residual image; and when a reduced size of the residual image or a reduced energy of the residual image

does not achieve a predetermined criteria; further identifying a replacement region, creating, identifying an atom within the subset of basis functions, quantizing, and encoding." (Support for the amendments to claim 1 may be found, for example, in paragraphs [0033] and [0034]of the published application).

Zakhor discloses a method of compressing video data using a pattern matcher to match portions of the motion residue signal to a pattern in a pattern library and forming an atom parameter string that characterizes the matched pattern. Zakhor provides that a motion residual signal is divided into seek blocks, and that "the sum of the squares of all pixel intensities is computed for each seek block 64. The seek block with the largest value is adopted as a selected input pattern 66...an SxS window is then formed around the region of the selected input pattern." (See column 5, lines 35-37). Thus, Zakhor discloses that the contents of the SxS window are compared to the different patterns of the pattern library to find the closest match.

Zakhor does not teach or suggest the element of "identifying a replacement region in the residual image for representation by an atom, the replacement region being determined by adding an adjacent block to an initial block of the residual image when an energy of the adjacent block exceeds an energy threshold," as recited in amended claim 1. Instead, the replacement region in Zakhor is determined by forming an SxS window around the seek block. The SxS window is *always* the same size and shape regardless of the energy level of blocks adjacent to the seek block. A closest match is determined by comparing the SxS window to every pattern in the pattern library.

Vleeschouwer discloses an encoding process for encoding video data that involves a first sub-encoding step and a second sub-encoding step. Vleeschouwer states, at paragraph [0080], that "[t]he result of said first sub-encoding step, denoted a first sub-encoded video frame, is actually the obtained error video frame. The further coding of said error video frame can be denoted by a second sub-encoding step." Vleeschouwer states, at paragraph [0088], that the "second sub-encoding methods can be based on wavelet transforms, matching pursuits, tree coding such as quadtree or binary tree coding or DCT (Direct Cosine Transformation) or similar."

Vleeschouwer does not teach or suggest "identifying a replacement region in the residual image for representation by an atom, the replacement region being determined by adding an adjacent block to an initial block of the residual image when an energy of the adjacent block exceeds an energy threshold," as recited in amended independent claim 1.

In the first sub-encoding step, Vleeschouwer teaches generating an error video frame and in the second sub-encoding step, Vleeschouwer teaches adapting encoding parameters based on a quantity determined in the first sub-encoding step. Vleeschouwer is not concerned with the type of encoding performed in the second sub-encoding step. As indicated at paragraph [0088], a matching pursuits encoding method or a quadtree-based encoding method may be used.

Neither Zakhor nor Vleeschouwer alone or in combination teaches or suggests "identifying a replacement region in the residual image for representation by an atom, the replacement region being determined by adding an adjacent block to an initial block of the residual image when an energy of the adjacent block exceeds an energy threshold" as recited in amended claim 1.

Therefore, Applicant submits amended claim 1 is patentable over Zakhor in view of Vleeschouwer. Applicant further submits that amended claims 10 and 11, which include similar limitations as claim 1, are also patentable over Zakhor in view of Vleeschouwer. It follows that claims 4, 5 and 7-9, which depend from claim 1, are also patentable over Zakhor in view of Vleeschouwer for at least the reasons that claim 1 is patentable.

New Claim 12

New claim 12 recites that the basis function currently being evaluated is removed when the basis function currently being evaluated is determined not to be a best match using a triangle inequality Support for new claim 12 may be found, for example, in paragraphs [0040] to [0042] and [0051] of the published application. New claim 12 depends from independent claim 1, and inherits the patentability thereof.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue. If it is determined that a telephone conference would expedite the prosecution of this application, the Examiner is invited to telephone the undersigned at the number given below.

In the event the U.S. Patent and Trademark office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to Deposit Account No. 03-1952 referencing docket no. 329092000600. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Dated: May 18, 2011   Respectfully submitted,

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